


Dated: November 4, 2002

Cooley Godward LLP
ATTN: Patent Group
One Freedom Square
Reston Town Center
11951 Freedom Drive
Reston, Virginia 20190-5656
Tel: (703) 456-8000
Fax: (703) 456-8100

Respectfully submitted,
COOLEY GODWARD LLP

By:



Erik B. Milch
Reg. No. 42,887

Enclosures: Appendix indicating Amendments to Claims

151716 v1/RE
392C01!.DOC

Appendix Indicating Claim Amendments

1. ~~(Amended) A surgical instrument for insertion into a body~~ An apparatus,
~~the surgical instrument~~ comprising:

an elongated member ~~comprising~~ having a distal portion
~~adapted~~ configured to engage tissue in ~~the~~ a body and having a manipulable proximal portion
~~capable of being manipulated by a user, wherein said elongated member can~~ configured to be
~~moved by said user in a degree of freedom;~~

a sensor ~~positioned~~ configured to detect ~~position or motion of the elongated~~
~~member, or a portion thereof, in said degree of freedom~~ position of the elongated member and
output a position signal based on the position;

a controller coupled to the sensor, the controller configured to output a force
signal based on the position signal; and

an actuator ~~engageable with the elongated member~~ configured to apply a force
~~thereto; and a controller in communication with the sensor and the actuator, the controller adapted~~
~~to control the application of the force~~ elongated member, wherein the force is being applied to the
elongated member as a haptic ~~indication to~~ feedback based on the user ~~when the elongated~~
~~member has been moved a predetermined distance or to a predetermined position by the user in~~
~~the degree of freedom~~ force signal.

2. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 1,
wherein the degree of freedom is a translational degree of freedom.

3. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 1,
wherein the degree of freedom is a rotational degree of freedom.

4. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 1,
wherein the haptic ~~indication~~ feedback includes at least one of a detent force, a vibration, a
barrier force, a damping force, and a spring force.

5. ~~(Amended)~~ ~~A surgical instrument according to~~ The apparatus of claim 1, wherein the haptic ~~indication~~feedback is output ~~to the user~~ when the distal portion of the elongated member has been translated to an end of a working channel that guides ~~said the~~ elongated member.

6. ~~(Amended)~~ ~~A surgical instrument according to~~ The apparatus of claim 1, wherein said haptic ~~indication~~feedback is output ~~to the user~~ each time the elongated member additionally moves ~~the~~ a predetermined distance.

7. ~~(Amended)~~ ~~A surgical instrument according to~~ The apparatus of claim 1, wherein the elongated member includes at least one or more of a guidewire, a catheter, a heart pacing lead, and a stylet.

8. ~~(Amended)~~ ~~A Surgical instrument according to~~ The apparatus of claim 1, wherein the distal portion of the elongated member includes at least one or more of a blade, a serrated edge, a biopsy tool, a trocar tip, an ultrasonic tool, a needle, a vibrating tip, a suturing tool, a retractor, an electrosurgical cutter, ~~a~~ an electrosurgical coagulator, a forceps, a needle holder, scissors, an irrigator, an aspirator, a medicator, a laser tool, a cryogenic tool, a flexible steering or guiding tip, and a camera.

9. ~~(Amended)~~ ~~A surgical instrument for insertion into a body~~ An apparatus, ~~the surgical instrument~~ comprising:

an elongated member ~~comprising~~having a distal portion ~~adapted~~configured to engage tissue in ~~the~~ a body and a manipulable proximal portion ~~capable of being manipulated by a user,~~ said proximal portion configured to be moved in a degree of freedom;

a sensor ~~positioned~~configured to detect a first force applied to the elongated member ~~by the user in the degree of freedom~~ and to output a sensor signal based on the first force;

an actuator ~~engageable with the elongated member to apply a second force thereto in the degree of freedom;~~ and

a controller in communication with the sensor and the actuator, the controller ~~adapted to control~~ configured to output a force signal based on the application of the sensor signal; and

an actuator configured to apply a second force to the elongated member in relation to the first degree of freedom based on the force detected by the sensor signal.

10. (Amended) ~~A surgical instrument according to The apparatus of claim 9,~~ wherein the degree of freedom is translational.

11. (Amended) ~~A surgical instrument according to The apparatus of claim 9,~~ wherein the degree of freedom is rotational.

12. (Amended) ~~A surgical instrument according to The apparatus of claim 9,~~ wherein the controller is programmable.

13. (Amended) ~~A surgical instrument according to The apparatus of claim 10,~~ wherein the magnitude of the second force is from about 10 percent to about 90 percent of the first force detected by the sensor.

14. (Amended) ~~A surgical instrument according to The apparatus of claim 13,~~ wherein the second force is applied in a direction ~~opposing~~ opposite an insertion direction of the elongated member.

15. (Amended) ~~A surgical instrument according to The apparatus of claim 10,~~ further comprising an outer member ~~comprising~~ having an orifice into which the elongated member is insertable and wherein the actuator ~~is being housed~~ disposed within the orifice.

16. (Amended) ~~A surgical instrument according to The apparatus of claim 15,~~ wherein the outer member is an endoscope and ~~wherein~~ the orifice is a working channel of the endoscope.

17. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 15, wherein the outer member is an introducer sheath and ~~wherein~~ the elongated member is an endovascular instrument.

18. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 17, wherein the endovascular instrument ~~comprises~~ includes at least one or more of a guidewire, a catheter, a heart pacing lead, and a stylet.

19. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 109, wherein the actuator is ~~capable of applying~~ configured to apply the second force ~~so that the second force is to be~~ additive to the first force applied to the elongated member ~~by the user~~.

20. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 9, wherein the actuator is ~~capable of applying~~ configured to apply the second force ~~so that the second force reduces to~~ counteract the first force applied to the elongated member by the user.

21. ~~(Amended) A surgical instrument according to claim 9~~ The apparatus of claim 9, the sensor being a first sensor, the apparatus further comprising a second sensor coupled to the actuator, the second sensor configured to detect the second force.

22. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 109, further comprising a position detector coupled to the elongated member, the position detector configured to detect a relative insertion position of the elongated member.

23. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 9, wherein the distal portion comprises at least one or more of a blade, a serrated edge, a biopsy tool, a trocar tip, an ultrasonic tool, a needle, a vibrating tip, a suturing tool, a retractor, an electrosurgical cutter, an electrosurgical coagulator, a forceps, a needle holder, scissors, an irrigator, an aspirator, a medicator, a laser tool, a cryogenic tool, a flexible steering or guiding tip, and a camera.

24. ~~(Amended) A surgical instrument according to claim 10~~ The apparatus of claim 9, the sensor being a first sensor, the actuator being a first actuator, the apparatus further comprising :

a second sensor positioned~~configured~~ to detect a rotational force being applied to the elongated member ~~by the user;~~ and

a second actuator ~~engageable with the elongated member~~configured to apply a rotational force ~~thereto~~ to the elongated member.

25. ~~(Amended) A surgical instrument according to~~ The apparatus of claim 11, wherein the second force is a rotational force.

31. ~~(Amended) A method of inserting a surgical an~~ instrument into an insertion site in or on a body, the method comprising:

inserting the ~~surgical~~ instrument into an orifice;

~~applying~~detecting a ~~user~~first force applied to at least a portion of the ~~surgical instrument to,~~ the first force the instrument inbeing associated with an insertion direction; and

applying a second force to the instrument from within the orifice.

32. ~~(Amended) A~~ The method according to~~of~~ claim 31, further comprising sensing the ~~user~~first force.

33. ~~(Amended) A~~ The method according to~~of~~ claim 32, wherein the second force is related to the ~~user~~first force.

34. ~~(Amended) A~~ The method according to~~of~~ claim 31, wherein the second force is in the insertion direction.

35. ~~(Amended) A~~ The method according to~~of~~ claim 31, wherein the second force is in a direction opposite ~~to~~ the insertion direction.

36. (Amended)-A The method according to claim 31, wherein the second force is applied by an electromechanical actuator.

37. (Amended)-A The method according to claim 31, further comprising:
detecting a position of the ~~surgical~~-instrument in a working channel extending from the orifice, the ~~surgical~~-instrument being sensed in the working channel using a sensor device, ~~wherein~~ the second force ~~is~~being applied to at least a portion of the ~~surgical~~ instrument using an actuator to move the instrument through the working channel, ~~wherein~~ the ~~surgical~~-instrument ~~is~~being moved to a position so that a leading end of the ~~surgical~~-instrument is located at a predetermined distance relative to an end of the working channel.

1513020%01\